

RATCHET WRENCH

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a ratchet wrench, and more particularly to a ratchet wrench that can be operated easily and conveniently.

2. Description of the Related Art

A conventional ratchet wrench in accordance with the prior art shown in Fig. 1 comprises a wrench body 30 including a handle 31 having an end formed with a drive head 32 having an inner wall formed with a receiving chamber 320 having a periphery formed with a plurality of ratchet teeth 322, an operation body 33 rotatably mounted in the receiving chamber 320 of the drive head 32 and having a top formed with a screw bore 330, a pawl member 38 mounted on the operation body 33 and having a side formed with a plurality of engaging teeth 380 meshing with the ratchet teeth 322 of the drive head 32, a rotation member 34 rotatably mounted on a top of the drive head 32 of the wrench body 30, a screw 36 extended through the rotation member 34 and screwed into the screw bore 330 of the operation body 33, and a coil 39 secured on and driven by the rotation member 34 and secured on the pawl member 38 for pivoting the pawl member 38. Thus, when the rotation member 34 is rotated, the coil 39 is driven by rotation of the rotation member 34 to pivot and move the pawl member 38.

1 However, the conventional ratchet wrench can withstand a smaller
2 torque, so that it is easily broken due to an excessive torque. In addition, the
3 rotation angle of the rotation member 34 cannot be controlled easily, thereby
4 causing inconvenience to the user. Further, the conventional ratchet wrench is
5 easily jammed due to a larger force.

6 **SUMMARY OF THE INVENTION**

7 The present invention is to mitigate and/or obviate the disadvantage
8 of the conventional ratchet wrench.

9 The primary objective of the present invention is to provide a ratchet
10 wrench that can be operated easily and conveniently, thereby facilitating the
11 user operating the ratchet wrench.

12 Another objective of the present invention is to provide a ratchet
13 wrench that can be assembled easily and rapidly.

14 A further objective of the present invention is to provide a ratchet
15 wrench that is manufactured easily and rapidly, thereby decreasing costs of
16 fabrication.

17 A further objective of the present invention is to provide a ratchet
18 wrench that has a greater torque, so that it is not easily broken due to an
19 excessive torque.

20 In accordance with the present invention, there is provided a ratchet
21 wrench, comprising a wrench body, an operation body, a limit plate, a pawl
22 member, a cover plate, a snap ring, and a rotation member, wherein:

1 the wrench body includes a handle having an end formed with a drive
2 head having an inner wall formed with a receiving chamber having a periphery
3 formed with a plurality of ratchet teeth;

4 the operation body is rotatably mounted in the receiving chamber of
5 the drive head and has a first side formed with an opening and a second side
6 formed with a receiving recess for receiving a torsion spring, the operation
7 body has a top formed with a protruding threaded support rod;

8 the limit plate is mounted on the operation body and has a first end
9 formed with limit portion formed with two opposite limit notches;

10 the pawl member is mounted in the opening of the operation body
11 and has a first side formed with a plurality of engaging teeth meshing with the
12 ratchet teeth of the drive head, the pawl member has a top formed with two
13 opposite stubs each secured in a respective one of the two opposite limit
14 notches of the limit portion of the limit plate, so that the pawl member is
15 rotated by the limit plate;

16 the cover plate is mounted on the support rod of the operation body
17 and is rested on the limit plate;

18 the snap ring is snapped on the support rod of the operation body and
19 is rested on the cover plate; and

20 the rotation member is rotatably mounted on a top of the drive head
21 of the wrench body for rotating the limit plate.

1 Further benefits and advantages of the present invention will become
2 apparent after a careful reading of the detailed description with appropriate
3 reference to the accompanying drawings.

4 **BRIEF DESCRIPTION OF THE DRAWINGS**

5 Fig. 1 is an exploded perspective view of a conventional ratchet
6 wrench in accordance with the prior art;

7 Fig. 2 is a partially cut-away exploded perspective view of a ratchet
8 wrench in accordance with the preferred embodiment of the present invention;

9 Fig. 3 is a partially cut-away perspective view of the ratchet wrench
10 in accordance with the preferred embodiment of the present invention;

11 Fig. 4 is a plan cross-sectional view of the ratchet wrench as shown
12 in Fig. 3;

13 Fig. 5 is a top plan view of the ratchet wrench as shown in Fig. 3;

14 Fig. 6 is a schematic operational view of the ratchet wrench as shown
15 in Fig. 5; and

16 Fig. 7 is a schematic operational view of the ratchet wrench as shown
17 in Fig. 5

18 **DETAILED DESCRIPTION OF THE INVENTION**

19 Referring to the drawings and initially to Figs. 2-5, a ratchet wrench
20 in accordance with the preferred embodiment of the present invention
21 comprises a wrench body 10, an operation body 13, a limit plate 17, a pawl
22 member 16, a cover plate 18, a snap ring 19, and a rotation member 20.

1 The wrench body 10 includes a handle 11 having an end formed with
2 a drive head 12 having an inner wall formed with a receiving chamber 120
3 having a periphery formed with a plurality of ratchet teeth 122.

4 The operation body 13 is rotatably mounted in the receiving chamber
5 120 of the drive head 12 and has a first side formed with an arc-shaped opening
6 132 and a second side formed with a receiving recess 130 for receiving a
7 torsion spring 14. The opening 132 of the operation body 13 has a wall formed
8 with a receiving hole 138. The operation body 13 has a top formed with a
9 protruding threaded support rod 134 and a bottom formed with an urging disk
10 136 rested on a bottom of the drive head 12 of the wrench body 10.

11 The limit plate 17 is mounted on the operation body 13 and is formed
12 with a through hole 170 for mounting the support rod 134 of the operation
13 body 13. The limit plate 17 has a first end formed with limit portion 174
14 formed with two opposite limit notches 176 and a second end formed with an
15 arc-shaped slot 172 aligning with the torsion spring 14.

16 The pawl member 16 is mounted in the opening 132 of the operation
17 body 13 and has a first side formed with a plurality of engaging teeth 160
18 meshing with the ratchet teeth 122 of the drive head 12. The pawl member 16
19 has a top formed with two opposite stubs 162 each secured in a respective one
20 of the two opposite limit notches 176 of the limit portion 174 of the limit plate
21 17, so that the pawl member 16 is rotated by the limit plate 17.

1 The ratchet wrench further comprises a spring 15 mounted in the
2 opening 132 of the operation body 13 and has a first end urged on the wall of
3 the opening 132 of the operation body 13 and a second end urged on a second
4 side of the pawl member 16. Preferably, the first end of the spring 15 is
5 mounted in the receiving hole 138 of the operation body 13.

6 The cover plate 18 is mounted on the support rod 134 of the
7 operation body 13 and is rested on the limit plate 17. The torsion spring 14 has
8 a first end secured on the operation body 13 and a second end secured on an
9 end of the cover plate 18.

10 The snap ring 19 is snapped on the support rod 134 of the operation
11 body 13 and is rested on the cover plate 18.

12 The rotation member 20 is rotatably mounted on a top of the drive
13 head 12 of the wrench body 10 for rotating the limit plate 17. The rotation
14 member 20 is mounted on the drive head 12 of the wrench body 10 by a screw
15 21 which is screwed into the support rod 134 of the operation body 13.

16 In operation, referring to Figs. 2-7, when the rotation member 20 is
17 rotated, the pawl member 16 is rotated by the limit plate 17 to move from the
18 position as shown in Fig. 5 to the position as shown in Fig. 6 (in the
19 counterclockwise direction) or to the position as shown in Fig. 7 (in the
20 clockwise direction), so that the engaging teeth 160 of the pawl member 16
21 mesh with the ratchet teeth 122 of the drive head 12. Thus, the operation body
22 13 is operated in one direction only by rotation of the drive head 12.

1 Accordingly, the ratchet wrench can be operated easily and
2 conveniently, thereby facilitating the user operating the ratchet wrench. In
3 addition, the ratchet wrench can be assembled easily and rapidly. Further, the
4 ratchet wrench is manufactured easily and rapidly, thereby decreasing costs of
5 fabrication. Further, the ratchet wrench has a greater torque, so that it is not
6 easily broken due to an excessive torque.

7 Although the invention has been explained in relation to its preferred
8 embodiment(s) as mentioned above, it is to be understood that many other
9 possible modifications and variations can be made without departing from the
10 scope of the present invention. It is, therefore, contemplated that the appended
11 claim or claims will cover such modifications and variations that fall within the
12 true scope of the invention.

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